PATENT ABSTRACTS OF JAPAN

(11)Publication number : **06-306252**
(43)Date of publication of application : **01.11.1994**

(51)Int.Cl. C08L 45/00
C08K 5/10
C08L 23/02
C08L 65/00

(21)Application number : **05-120570**
(22)Date of filing : **23.04.1993**

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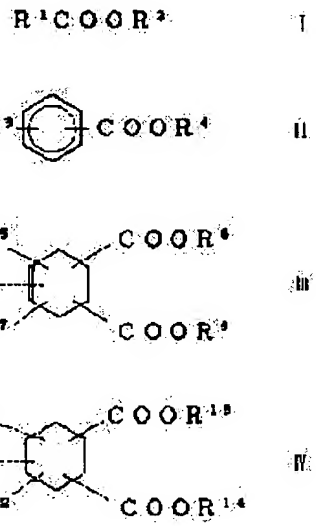
(54) CYCLOPOLYOLEFIN RESIN COMPOSITION

(57)Abstract:
PURPOSE: To obtain the composition having excellent low-temperature impact resistance, flexibility, moldability and gasoline resistance and useful for interior and exterior materials for automobile, materials for construction and building, etc., by compounding a cyclopolyolefin resin with a specific ester compound.
CONSTITUTION: The objective composition is produced by compounding (A) a cyclopolyolefin resin with (B) a compound of formula I (R1 is 5-35C alkyl or alkenyl; R2 is 6-28C alkyl or alkenyl), a compound of formula II (R3 is H, 1-10C alkyl or 2-10C alkenyl; R4 is R2), a compound of formula III (R5, R6 and R7 are H, 1-5C alkyl, 2-5C alkenyl or endomethylene; R8 and R9 are R2) or a compound of formula IV (R10, R11 and R12 are R5; R13 and R14 are R2).



LEGAL STATUS

[Date of request for examination] 19.04.2000
[Date of sending the examiner's decision of rejection]
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]
[Date of final disposal for application]
[Patent number]
[Date of registration]
[Number of appeal against examiner's decision of rejection]
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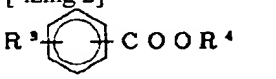
CLAIMS

[Claim]
[Claim 1] The annular polyolefine system resin constituent characterized by coming to blend at least one or more kinds of ester system compounds expressed with a general formula (1), a general formula (2), a general formula (3), or a general formula (4) to an annular polyolefine system resin.
[-izing 1]

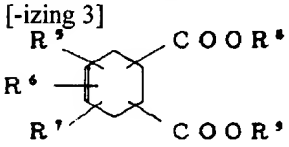
(1)

R1 expresses the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 5-35 among [formula. R2 expresses the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28.]
[-izing 2]



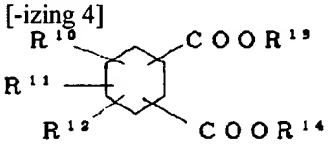
(2)

R3 expresses the shape of a straight chain and the branched-chain alkenyl machine of a hydrogen atom, the shape of a straight chain of carbon numbers 1-10, a branched-chain alkyl group, or the carbon numbers 2-10 among [formula. R4 expresses the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28.]
[-izing 3]



(3)

the inside of [formula, and R5, R6 and R7 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R8 and R9 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]
[-izing 4]



(4)

the inside of [formula, and R10, R11 and R12 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R13 and R14 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]

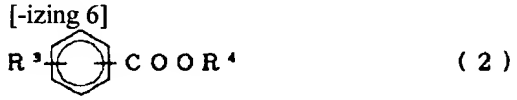
[Translation done.]

DETAILED DESCRIPTION

[Detailed description]
[0001]
[Field of the Invention] this invention relates to an annular polyolefine system resin constituent useful as a molding material.
[0002]
[Prior art] The annular polyolefine system resin is excellent in transparency, thermal resistance, solvent resistance, a dielectric characteristics, various mechanical properties, etc., and is known by various intended use, such as autoparts, machine housing, a machine part, the gasket for building materials, engineering works or a structural tarpaulin, an industrial-use hose or tubes, housing for household electric appliances, a bag, sporting goods, and an office supplies, as a useful material (publication number 356554 [four to] etc.).
[0003] However, since the concerned resin had the shock resistance in low temperature, and low flexibility, it had the inclination to receive a limit in the use especially in a cold district. Moreover, as a material in the intended use of inner sheathing, such as an automobile and a vehicle, electrical wire and a household-electric-appliances device, engineering works, construction and building materials, a hose tube, etc., since a property like a polyvinyl chloride resin system elastomer or a soft polyvinylchloride resin is not provided, in spite of the room of an improvement having accepted, in addition, the improvement means effective until now is not known especially.
[0004]
[Object of the Invention] The shock resistance, flexibility, workability, and gasoline-proof nature of this invention in low temperature are good, and it aims at offering the annular polyolefin resin constituent with which the fluidity has been improved.
[0005]
[The means for solving a technical problem] In order that this invention persons may attain the above-mentioned purpose, zealously, to the annular polyolefine system resin, by blending the ester compound which has specific structure, they find out that a desired effect is acquired and came to complete this invention based on such knowledge as a result of the study.
[0006] That is, it is characterized by the annular polyolefine system resin constituent concerning this invention coming to blend at least one or more sorts of ester compounds (for it to be named "this ester" generically below.) expressed with a general formula (1), a general formula (2), a general formula (3), or a general formula (4) to an annular polyolefine system resin.
[0007]
[-izing 5]

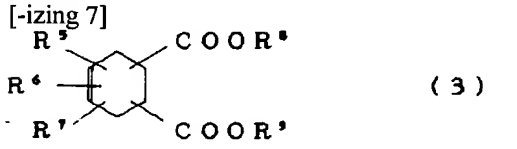
(1)

R1 expresses the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 5-35 among [formula. R2 expresses the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28.]
[0008]
[-izing 6]



(2)

R3 expresses the shape of a straight chain and the branched-chain alkenyl machine of a hydrogen atom, the shape of a straight chain of carbon numbers 1-10, a branched-chain alkyl group, or the carbon numbers 2-10 among [formula. R4 expresses the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28.]
[0009]
[-izing 7]

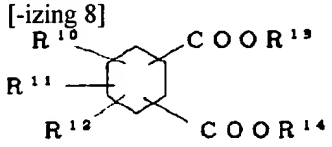


(3)

the inside of [formula, and R5, R6 and R7 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R8 and R9 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]

[0010]

[-izing 8]



(4)

the inside of [formula, and R10, R11 and R12 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R13 and R14 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]

[0011] Although especially the manufacture technique of this ester is not limited and well-known arbitrary operations can be conventionally used for it, the method of esterifying predetermined monochrome, a dicarboxylic acid or its acid anhydride, and a predetermined fatty alcohol as the general technique, while removing produced water under presence of a non-catalyst or a catalyst is mentioned. Hereafter, it explains in full detail for every group.

[0012] The ester expressed with a general formula (1) is easily compounded by carrying out the esterification reaction of a predetermined aliphatic monocarboxylic acid and a predetermined fatty alcohol according to a conventional method.

[0013] As the concerned aliphatic monocarboxylic acid, the saturation or unsaturated fatty acid of carbon numbers 6-36 is illustrated, and the saturation or unsaturated fatty acid of carbon numbers 8-24 is illustrated more preferably. Since gasoline-proof nature falls in the fatty acid with which the compatibility to an annular polyolefine system resin falls in less than six fatty acid, it becomes easy to carry out bleeding of the carbon number, and a carbon number exceeds 36 conversely, it is not desirable.

[0014] As a desirable aliphatic monocarboxylic acid concerning this invention, octylic acid, 2-ethyl hexanoic acid, a nonoic acid, a caprylic acid, a capric acid, a lauric acid, a myristic acid, a palmitic acid, stearin acid, isostearic acid, behenic acid, an oleic acid, linolic acid, a linolenic acid, a dimer acid, etc. are illustrated, and 2-ethyl hexanoic acid, a nonoic acid, a caprylic acid, a capric acid, a lauric acid, a myristic acid, a palmitic acid, stearin acid, isostearic acid, an oleic acid, etc. are recommended especially.

[0015] The ester expressed with a general formula (2) is easily compounded by carrying out the esterification reaction of a predetermined aromatic monocarboxylic acid and a predetermined fatty alcohol according to a conventional method.

[0016] As the concerned aromatic monocarboxylic acid, a benzoic acid, o-methyl benzoic acid, m-methyl benzoic acid, p-methyl benzoic acid, o-ethyl benzoic acid, m-ethyl benzoic acid, p-ethyl benzoic acid, etc. are illustrated.

[0017] The ester expressed with a general formula (3) is easily compounded by carrying out the esterification reaction of an alicyclic unsaturation dicarboxylic acid, or its predetermined anhydride and predetermined fatty alcohol according to a conventional method.

[0018] As the concerned alicyclic unsaturation dicarboxylic acid or its acid anhydride, the acid anhydride obtained by the reaction of deca trien, such as a tetrahydrophtal acid, a methyl tetrahydrophtal acid, a dimethyl butenyl tetrahydrophtal acid, a ******** acid, a methyl ******** acid, methyl himic acid, those acid anhydrides and those isomers (a geometrical isomer and a structural isomer are included.), and **********, alpha-terpinene, and a maleic anhydride, its disengagement carboxylic acid, etc. are illustrated.

[0019] The ester expressed with a general formula (4) is easily compounded by carrying out the esterification reaction of an alicyclic saturation dicarboxylic acid, or its predetermined acid anhydride and predetermined fatty alcohol according to a conventional method. Moreover, it can obtain also by carrying out nuclear hydrogenation of the ester expressed with a general formula (3).

[0020] As the concerned alicyclic saturation dicarboxylic acid or its anhydride, hexahydrophthalic acid, methyl hexahydrophthalic acid, a ******** acid hydrogenation object, methyl ******** acid hydrogenation objects, these acid anhydrides, those isomers (a geometrical isomer is included.), etc. are illustrated.

[0021] The fatty alcohol used as an alcoholic component of each above-mentioned ester concerning this invention is a fatty alcohol of the saturation of carbon numbers 6-28, or an unsaturation, and is a fatty alcohol of carbon numbers 8-24 more preferably. Since gasoline-proof nature falls in the alcohol in which the compatibility to an annular polyolefine system resin falls in less than six alcohol, it becomes easy to carry out bleeding of the carbon number, and a carbon number exceeds 28 conversely, it is not desirable.

[0022] As a desirable fatty alcohol concerning this invention A heptanol, 2-ethyl hexanol, n-octanol, iso nonanol, A 3, 5, and 5-trimethyl hexanol, n-decanol, an iso decanol, An undeca Norian, a dodecanol, a tridecyl alcohol, ********** 610 (vista chemical Far East company make), ********** 79 -- said -- 911 (shell chemistry company make) and gold [a diamond / 79] -- said -- 911 -- said -- 11 -- said -- 113 (Mitsubishi Kasei Corp. make) -- The dimerization alcohol obtained by the gar bed reaction of a myristyl alcohol, cetyl alcohol, a stearyl alcohol, a behenyl alcohol, oleyl alcohol, and these alcohol is illustrated.

[0023] As an esterification catalyst chosen and applied in the above-mentioned esterification A sulfuric acid, a hydrochloric acid, a phosphoric acid, Para toluenesulfonic acid, a methanesulfon acid, Acid catalysts, such as an alkyl sulfuric acid, an aluminum sulfate, lithium fluoride, potassium chloride, Metal salts, such as a cesium chloride, a calcium chloride, ferric chloride, and an aluminium phosphate, ZnO2 / C and SnO, and SiO2- metallic oxides, such as TiO2, ZnO, Fe2O3, and a heteropolyacid, -- Alumina-alkali multicomputer systems, such as aluminum2O3-KOH-LiOH and aluminum2O3-NaOH, Nature, such as a mordenite and a ** cation-ized Y zeolite, and a composite zeolite, Organic metals, such as ion exchange resin, such as solid-state superacid, such as SO42-/ZnO2 and SO42-/TiO2, a cation exchange resin, and an anion exchange resin, tetrapod alkyl titanate and its polymer, Bu2Sn(OBu) alumnus (OBu)2, and the oxalic acid 1st tin, etc. are illustrated.
[0024] Especially as after treatment after an esterification reaction conclusion, although not limited, superfluous alcohol is distilled out of the inside of a system, for example, it passes through saturation and a rinsing stroke, and the method of finally refining ester is mentioned. Moreover, it is also possible to use for the ester which does not refine, only distills off superfluous alcohol out of a system, and starts this invention especially.
[0025] The modality of this ester blended with an annular polyolefine system resin is suitably chosen according to the property made into the purpose. For example, when the ester compound expressed with a general formula (1) when making cold resistance and a shock-proof improvement into a key objective is recommended and it makes an improvement of the compatibility with a resin into a key objective, the ester compound expressed with a general formula (2) is recommended. Moreover, when making into a key objective possession of breaking strength which was excellent with the performance which maintained the balance as an elasticity product, the ester compound expressed with a general formula (3) and a general formula (4) is recommended. Furthermore, when making a weatherproof improvement into a key objective, the compound whose R13 and R14 in R2 in especially a general formula (1) or a general formula (4) are an alkyl group among the ester compounds expressed with a general formula (1) or a general formula (4) is recommended.
[0026] The annular polyolefine system resin concerning this invention is the general term of the polymer constituted considering the annular olefin of the polymerization nature which has an ethylene nature double bond endocyclic as a monomer unit, and, specifically, polymer-blend objects, such as the above-mentioned and polymers, such as ethylene and an annular olefin system copolymer, the ring-opening-polymerization field of an annular olefin, and the ring-opening-polymerization field of two or more sorts of annular olefins, various rubber-like polymers and an amide system polymer and an ester system polymer, and an elastic elastomer, are illustrated. Such a polymer is indicated by Provisional Publication No. 168708 [60 to], Provisional Publication No. 120816 [61 to], Provisional Publication No. 252406 [62 to], the publication number 167318 [two to], the publication number 35653 [four to], etc.
[0027] As a typical annular olefin which constitutes the above-mentioned annular olefin ring-opening-polymerization field and an above-mentioned annular olefin system copolymer 1, 4, 5, 8-dimethano which are manufactured by condensing **********s and a cyclopentadiene - 1, 2, 3, 4, 4a, 5, 8, and 8a-octahydronaphthalene The account of an example of the 6-ethyl bicyclo [2.2.1] hept-2-**** compounded from hexa cyclo [6.6.1.1.1.0.0] heptadecene -4 kind, ethylene, and a cyclopentadiene is carried out.
[0028] It is also possible to carry out the polymer blend of other resins to the above-mentioned annular polyolefine system resin, to alloy-ize them to it, and to use them for it.
[0029] The above-mentioned polymer which can carry out a blend is not what is specified. as an example Natural rubber, styrene butadiene rubber, butadiene rubber, polyisoprene rubber, An ethylene propylene copolymer, an ethylene-propylene-diene terpolymer, Nitril butadiene rubber, chloroprene rubber, isobutylene isoprene rubber, polyurethane rubber, Rubber-like polymers, such as silicone rubber, nylon 6, Nylon 66, Nylon 610, Nylon 612, Nylon 11, Nylon 12, copolymerization nylon, Amide system polymers, such as nylon MXD6 and denaturation polyamide 6T, a polyethylene terephthalate, Ester system polymers, such as a polybutylene terephthalate, polyhexamethylene terephthalate, polyethylene isophthalate, polytetramethylene sebacate, and a polypropylene horse mackerel peat, etc. are mentioned.
[0030] Furthermore, the olefin system elastomer represented by what carried out partial bridge formation of ethylene alpha olefin rubber / the polypropylene, The styrene system elastomer represented by a polybutadiene, or a polyisoprene / polystyrene system, The polyester system elastomer represented with the copolymer of a polytetramethylene oxide glycol / polybutylene terephthalate, or a poly-caprolactone / polybutylene-terephthalate system, The polyamide system elastomer represented with polyamide resin / polyalkylene glycol copolymer, Syndiotactic - It is possible to also blend the elastic elastomer by which the account of an example is carried out by thermosetting elastomers, such as thermoplastic elastomer, such as a polybutadiene system elastomer, and the polyurethane system elastomer of 1 and 2-polybutadiene, and a silicone system elastomer, etc.
[0031] The following domains are recommended according to the resin property which makes the loadings of this ester to an annular polyolefine system resin the structure and its key objective of this ester of what is not limited especially as long as a predetermined effect is acquired. namely, -- the case where it applies the ester which has 6 - 100 weight section and 6 member ring which is 6 - 60 weight section grade more preferably, and is expressed with a general formula (2), (3), and (4) in applying the chain-like ester expressed with a general formula (1) to the concerned resin 100 weight section -- 0.2 - 100 weight section -- it is 1 - 60 weight section grade more preferably Even if the predetermined reforming effect is hard to be acquired and it blends conversely exceeding the concerned loadings, as for increase of a remarkable effect, it carries out and is not desirable at under each above-mentioned loadings that cannot expect but bleeding increases on the contrary etc.
[0032] On the other hand, the example of a recommendation of the concerned loadings according to the key objective is

shown below. That is, in flexibility, cold resistance, and elasticity combination aiming at shock-proof enhancement, it is 0.2 - 5 weight section grade in hard combination aiming at enhancement of 5 - 60 weight section grade, workability, and shock resistance.

[0033] Moreover, in the system which blended bulking agents, such as a calcium carbonate, a fiberglass mat, titanium oxide, clay, carbon black, talc, an antimony oxide, hydration aluminum, a magnesia, a calcium hydroxide, silicic acid, and a metal powder, the loadings about 1 - 100 weight section are chosen.

[0034] Conventionally, this ester may be used together with various kinds of ester compounds known as a plasticizer, and may be blended with the concerned annular polyolefine system resin. such a plasticizer ****** -- benzoates, such as ethylene glycol dibenzoate and propylene glycol dibenzoate, dibutyl phtalate, a phthalic-acid dihexyl, ********** (2-ethylhexyl), ********** (n-octyl), a phthalic acid diisononyl ester, a diisodecyl phthalate, phthalic-acid **********, a phthalic acid ditridecyl ester, and gold [a diamond / 79] -- said -- the phthalic ester of 911, and ********** 79 -- said -- phthalic esters, such as a phthalic ester of 911, a phthalic-acid dibutoxy ethyl, and a phthalic acid benzyl butyl ester, and [0035] Aliphatic system ester, such as ********** (2-ethylhexyl), a ********** n-octyl, diisononyl adipate, a diisodecyl adipate, the adipate of ********** 610, the adipate of gold one 79 a diamond, an adipate of ********** 79, an adipic-acid dibutoxy ethyl, an adipic-acid dibutoxy ethoxy ethyl, a dioctyl azelate, and ********** (2-ethylhexyl), [0036] Trimellitic acid ester, such as trimellitic acid **** (2-ethylhexyl), a trimellitic acid **** n-octyl, a trimellitic acid ******** nonyl, trimellitic acid triisodecyl, trimellitic acid ester of gold one 79 a diamond, trimellitic acid ester of ********** 79, and a trimellitic acid ********** ethyl, [0037] Phosphoric ester, such as tricresyl phosphate, a phosphoric-acid-2-ethylhexyl diphenyl, and a phosphoric-acid ********** ethyl, [0038] Polyester system plasticizers, such as a propylene glycol and an adipic-acid system, a propylene glycol and a phthalic-acid system, a butylene glycol and an adipic-acid system, and a propylene glycol, a sebacic-acid system, [0039] Epoxy system plasticizers, such as epoxidation soybean-oil, epoxidation linseed-oil, epoxy stearin acid octyl, 4, 5-epoxy hexahydrophthalic acid dioctyl, 4, and 5-epoxy hexahydrophthalic acid screw (9, 10-epoxy stearyl), chlorinated paraffin, etc. are illustrated.

[0040] Although the loadings of the above-mentioned plasticizer used together by request are not limited especially as long as a predetermined effect is acquired, they are usually 1 - 30 weight section grade to the annular polyolefine system resin 100 weight section.

[0041] Various additives, such as a stabilizer, a stabilization assistant, a workability enhancement resin, an ultraviolet ray absorbent, a bulking agent, a coloring agent, a foaming agent, a lubricant, a resin reinforcement, a cross linking agent, an antimicrobic agent, an antifungal agent, a flame retarder, a mold releasing agent, an insecticide, a repellent, a plate-out inhibitor, and an antistatic agent, etc. can be blended with the annular polyolefin resin constituent concerning this invention if needed.

[0042] Especially the manipulation technique of the annular polyolefin resin constituent concerning this invention is not limited. For example, the technique of obtaining a product, and the technique of supplying and fabricating the concerned resin constituent to a direct making machine are possible by letting the annular polyolefin resin constituent which carried out preliminary mulling of the additive blended an annular polyolefine system resin, this ester, and if needed, and obtained it pass to various making machines.

[0043] The reserve mixing of an annular polyolefin resin constituent is prepared by kneading the various components of the specified quantity using conventionally well-known kneading machines, such as a Banbury mixer, a Henschel mixer, and a ribbon blender, and the addition sequence is not asked.

[0044] The annular polyolefin resin constituent obtained in this way Calender molding, extrusion molding, injection molding, a paste technique, etc. are conventionally cast by the technique used in each field. A leather, a film, a stretch film, the film for agriculture, a sheet, A foaming article, a floor agent, wallpaper, footwear, a hose, a tube, electrical wire, a paste sol cast, A packing agent, roof material, a pipe, a splice, a plate, a corrugated plate, a flooring, a container, a toy, Roof material, tentorium, a bumper, a trim, the tube for propellants, an instrument panel, It is useful as the elasticity applied to automobiles, such as headrest epidermis and a grip, and the parts for vehicles, cold storage parts, a dc-battery case, the flexible grant agent of concrete, a porous film, an adhesives constituent, etc., half-hard, hard, a sol, and a gel constituent.

[0045] Especially, it is useful as the automobile which is the intended use of thermoplastic elastomer and a vehicle, electrical wire and a household-electric-appliances device, engineering works and construction, building materials, and a material of a hose tube.

[0046]

[Example] An example is hung up over below and this invention is explained to it in detail. In addition, the property of the resin constituent in each example was measured by the following technique, and was evaluated.

[0047] The manufacture:annular polyolefine system resin of a test piece and predetermined ester are mixed at 200-230 degrees C using a lab plastic strike mill, and an annular polyolefine system resin constituent is obtained.

[0048] Next, a sheet with a thickness of about 1mm is created under a preheating (3 minutes) and the condition of pressurization (2 minutes, 100kg/cm2) using the 30t press which carried out the temperature up to 200 degrees C. The obtained sheet is cut out in a predetermined size and each examination is presented.

[0049] Bleeding [-proof] Nature: After leaving a press sheet for one week under a room temperature, the existence of bleeding was observed visually and the following three-stages estimated.

When there is no bleeding When O bleeding occurs slightly In a certain case, O bleeding is notably. x [0050] Transparency:

After leaving a press sheet for one week under a room temperature, the extent was evaluated by measuring the Hayes value (light which the transmitted light diffuses comparatively).
[0051] Tension-test: Based on JIS K 6723, the tension test was performed in 25 degrees C, and plasticizing efficiency was evaluated by measuring fracture elongation.
[0052] : [Cold-resistant] The softening temperature of crash ****** was measured based on JIS K 6745.
[0053] After having carried out stearin acid tridecyl (it is written as "ST/TDA" below.) 25 weight section combination and preparing a press sheet to example 1 ethylene and the [tradename "APEL-LTMA" MFR(2.16kg load, 230 degrees C) =39.0g /, 10 minutes, and Mitsui petrochemical company make] made from annular olefine copolymer 100 weight section, the sheet physical properties were measured. The obtained result is shown in the 1st table.
[0054] The loadings of example 2ST/TDA were set to 40phrs, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0055] The loadings of example 3ST/TDA were set to 3phrs, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0056] As four examples ester, isostearic acid-2-hexyl ****** (it is written as "IST/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0057] As five examples ester, oleic-acid-2-hexyl ****** (it is written as "D 100/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0058] As six examples ester, oleic-acid oleyl (it is written as "OLO" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0059] As seven examples ester, benzoic-acid-2-hexyl ****** (it is written as "BA/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0060] As eight examples ester, tetrahydrophtal acid ** (2-ethylhexyl) (it is written as "DOTP" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0061] As nine examples ester, tetrahydrophtal acid ********** (it is written as "DUTP" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0062] As ten examples ester, tetrahydrophtal acid ** (2-hexyl ******) (it is written as "TH/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0063] The loadings of example 11TH/160 were set to 40phrs, and also sheet physical properties were measured according to the example 9. The obtained result is shown in the 1st table.
[0064] As 12 examples ester, 4-methyl tetrahydrophtal acid ** (2-hexyl ******) (it is written as "MT/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0065] As 13 examples ester, 3 and 6- and methylene tetrahydrophtal acid ** (2-ethylhexyl) (it is written as "NA/160" below.) were used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0066] As 14 examples ester, ********** (n-octyl) (it is written as "HH/nOct" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0067] As 15 examples ester, the hexahydrophthalic acid ****** nonyl (it is written as "HH/INA" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0068] As 16 examples ester, ********** (n-******) (it is written as "HH/C10" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0069] The loadings of example 17HH/C10 were set to 40phrs, and also sheet physical properties were measured according to the example 15. The obtained result is shown in the 1st table.
[0070] As 18 examples ester, ********** (2-hexyl ******) (it is written as "HH/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0071] As 19 examples ester, 4-methyl ********** (2-hexyl ******) (it is written as "MH/160" below.) was used, and also sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0072] ********** (2-ethylhexyl) (it is written as "DOP" below.) was used instead of the one example ester of a comparison, and also it prepared according to the example 1, and the sheet physical properties of a resin constituent were measured. The obtained result is shown in the 1st table.
[0073] The loadings of example of comparison 2DOP were set to 40phrs, and also it prepared according to the example 1, and the sheet physical properties of a resin constituent were measured. The obtained result is shown in the 1st table.
[0074] The press sheet of APEL-LTMA which does not blend an example of comparison 3 ester system compound was prepared, and the sheet physical properties were measured according to the example 1. The obtained result is shown in the 1st table.
[0075]
[Effect of the invention] By blending the ester system compound concerning this invention, it excels in a compatibility, plasticizing efficiency, cold resistance, shock resistance, a fluidity, and gasoline-proof nature, a fabricating operation can be easily done by the various molding technique by thermoplasticity, and a useful annular polyolefin resin constituent can be obtained as a molding material.

[Table 1]

第 1 表

	エステル	配合量 (phr)	ブリード	ヘイズ (%)	伸び (%)	柔軟温度 (℃)
実施例 1	ST/TDA	25	◎	8	280	-17
実施例 2	ST/TDA	40	○	15	433	-33
実施例 3	ST/TDA	3	◎	3	18	45
実施例 4	IST/160	25	◎	6	240	-14
実施例 5	D100/160	25	◎	8	290	-19
実施例 6	OLO	25	◎	9	288	-19
実施例 7	BA/160	25	◎	5	310	-11
実施例 8	DOTP	25	○	15	262	- 8
実施例 9	DUTP	25	◎	4	288	-12
実施例 10	TH/160	25	◎	9	248	- 7
実施例 11	TH/160	40	○	12	385	-25
実施例 12	MT/160	25	◎	9	254	- 4
実施例 13	MA/160	25	◎	7	262	- 4
実施例 14	MH/nOct	25	○	17	290	-13
実施例 15	MH/INA	25	◎	4	268	- 9
実施例 16	MH/C10	25	◎	3	270	-13
実施例 17	MH/C10	40	○	9	415	-26
実施例 18	MH/160	25	◎	3	270	- 5
実施例 19	MH/160	25	◎	8	262	- 3
比較例 1	DOP	25	×	66	8	21
比較例 2	DOP	40	×	95	10	14
比較例 3	−	−	−	3	8	63

[Translation done.]

TECHNICAL FIELD

[Field of the Invention] this invention relates to an annular polyolefine system resin constituent useful as a molding material.

[Translation done.]

PRIOR ART

[Prior art] The annular polyolefine system resin is excellent in transparency, thermal resistance, solvent resistance, a dielectric characteristics, various mechanical properties, etc., and is known by various intended use, such as autoparts, machine housing, a machine part, the gasket for building materials, engineering works or a structural tarpaulin, an industrial-use hose or tubes, housing for household electric appliances, a bag, sporting goods, and an office supplies, as a useful material (publication number 356554 [four to] etc.).

[0003] However, since the concerned resin had the shock resistance in low temperature, and low flexibility, it had the inclination to receive a limit in the use especially in a cold district. Moreover, as a material in the intended use of inner sheathing, such as an automobile and a vehicle, electrical wire and a household-electric-appliances device, engineering works, construction and building materials, a hose tube, etc., since a property like a polyvinyl chloride resin system elastomer or a soft polyvinylchloride resin is not provided, in spite of the room of an improvement having accepted, in addition, the improvement means effective until now is not known especially.

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the invention] By blending the ester system compound concerning this invention, it excels in a compatibility, plasticizing efficiency, cold resistance, shock resistance, a fluidity, and gasoline-proof nature, a fabricating operation can be easily done by the various molding technique by thermoplasticity, and a useful annular polyolefin resin constituent can be obtained as a molding material.

[Table 1]

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実施例 7	BA/160	25	◎	5	310	-11
実施例 8	DOTP	25	○	15	262	- 8
実施例 9	DUTP	25	◎	4	288	-12
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実施例 11	TH/160	40	○	12	385	-25
実施例 12	MT/160	25	◎	9	254	- 4
実施例 13	MA/160	25	◎	7	262	- 4
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実施例 15	HH/INA	25	◎	4	268	- 9
実施例 16	HH/C10	25	◎	3	270	-13
実施例 17	HH/C10	40	○	9	415	-26
実施例 18	HH/160	25	◎	3	270	- 5
実施例 19	HH/160	25	◎	8	262	- 3
比較例 1	DOP	25	×	66	8	21
比較例 2	DOP	40	×	95	10	14
比較例 3	−	−	−	3	8	63

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Object of the Invention] The shock resistance, flexibility, workability, and gasoline-proof nature of this invention in low temperature are good, and it aims at offering the annular polyolefin resin constituent with which the fluidity has been improved.

[Translation done.]